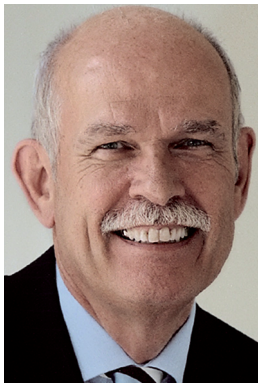
Risk Adjustment Systems in Health Insurance Markets in the US, Germany, Netherlands and Switzerland

Udo Schneider*,
Volker Ulrich* and
Eberhard Wille**



Introduction

A risk adjustment system is a necessary prerequisite for competition between health plans or sickness funds. It is only unnecessary in a national insurance plan or in a system with risk-related premiums. Risk adjustment primarily serves the purposes of preventing or, as far as possible, restricting risk selection between the sickness funds and encouraging them and the service providers to act along cost-effective lines (Van de Ven and Ellis 2000). Therefore, competition does not constitute a goal in itself, but an instrument for achieving efficient and effective health care provision based on the preferences of the insured. Competition between sickness funds is largely designed to spill-over to the benefits sector and to improve the provision of health benefits. Viewed from this perspective, risk adjustment possesses a merely instrumental character. Firstly, it constitutes a means of achieving competition and secondly, it impacts only indirectly the efficiency and effectiveness of health care provision. As a consequence, the reform of the risk adjustment system is not done "for its own sake". In other words, the aim should not be find-ing the maximum degree of differentiation, but it is rather an "optimum" risk adjustment system that is intended.

The problems of self-selection and risk selection in health insurance markets are common to social health insurance systems where premium payments do not depend on the individual risk of the insured but instead premiums are, e.g., community rated or depend on earned income (Cutler and Zeckhauser 2000). With the use of risk-adjustment schemes, regulators aim at lowering or even removing any incentives for insurers for cream skimming, i.e., to attract only those individuals with low health risks and to reject those with higher risks. One way to deal with this problem is to introduce an obligation to contract for insurers and to ban risk differentiation of premiums. Nevertheless, because of the remaining opportunities to select the insured, factors that correlate with the individual risk are used to correct payments from and to insurers, thereby seeking to eliminate any incentives to select individuals.

The factors on which adjustment schemes are based on vary between different countries. One tendency is that regulators aim at a perfect risk adjustment mechanism. By doing so, different strategies and risk factors are used. Generally, risk adjustment should provide a basis for a more competitive health insurance system. In the sense of performance-oriented competition risk adjustment schemes primarily serve the purpose of preventing or, as far as possible, restricting risk selection on the part of the health plans, and encouraging plans and benefit providers to act along cost-effective lines.

In contrast to the health insurance systems in the United States and Switzerland, in the existing German statutory health insurance system the health funds possess relatively few risk selection tools, meaning that greater differentiation of the risk structure equalization system for the purpose of avoiding this danger does not appear urgently necessary. Nevertheless, there is a plan to introduce an intensified adjustment system beginning in 2009 that aims at better incorporating morbidity aspects of the patients.

* University of Bayreuth.
** University of Mannheim.

Risk adjustment in selected countries

The US experience

In contrast to other countries, the health insurance system in the US rests more upon private elements. Nevertheless, there are public health programs like Medicare or Medicaid where risk selection may be a problem due to community-rated premiums or possible risk selection by providers. Hence, in these systems, formal risk adjustment models are used to reduce incentives for risk selection (Glazer and McGuire 2006; McGuire 2007, 84).

A closer look at the US health insurance market shows that in 2006, 54 percent of the total population (296.1 million) had employer-sponsored insurance, 12 percent were insured by Medicaid or other public systems, 14 percent by Medicare and 5 percent had other private insurance plans (Kaiser Family Foundation 2008). About 16 percent of the population had no health insurance at all.

Looking at the enrollees, about 60 million people are enrolled in a private health insurance plan whereas only 15.3 million are enrolled in Medicare or Medicaid.[1] In private health plans formal risk adjustment is hardly used. Instead, they rely on selective contracting and negotiations to fight inefficiencies due to risk selection. In public programs, formal risk selection formulas are predominant. The Medicaid program uses a payment system with a comparatively simple adjustment scheme that can be differentiated by eligibility.

Medicare is a program that defines rules for payments of qualified plans and providers. Compared to the Medicaid system, the risk adjustment formula in the Medicare program is more complex (Kominski 2007). The task is to bring in line the payments to providers or premiums to health plans with the expected costs of providing the agreed services for the individual patient. The payments to providers differ by type of provider and by benefit bundles. Moreover, physician professional services are excluded from the payment bundle. For providers, prospective payments were introduced to encourage efficiency of delivering care. The payments are adjusted for personal characteristics of the patient so that providers that restrict themselves to necessary treatments are rewarded and those with excessive prescriptions are penalized. In the managed care option of Medicare, private plans enroll Medicare beneficiaries and provide the contracted benefits. Therefore, they receive a monthly premium that differs by beneficiaries' individual risks and covers attributes due to the risk adjustment formula.

Payments to providers

As already noted, provider payments differ with respect to patient's characteristics and risk. Therefore, a patient classification system is used (Kominski 2007, 5). It is associated with the provider type and results in case mix groups, i.e., categories of patients which are similar with respect to treatment cases. For a particular type of provider the average costs of patient in a group are compared to the average costs for all groups. The risk-adjustment formula of Medicare uses this ratio as a relative weight to adjust the standard provider payment for a certain type of provider.

Since treatment costs differ between providers and with respect to risk factors, different classification systems exist for different types of providers. The individual risk adjusters are age, gender, Medicaid status, and diagnosis from hospital claims in the previous year (McGuire 2007, 88). For instance, patients treated in an acute care hospital are classified on basis of their diagnosis-related group (DRG). Moreover, for hospital services, the relative weights differ because of different types with varying treatments and cost structures (Kominski 2007, 6). The required data on patient-level information are reported using codes on diagnostic and treatment information from the ICD-9-CM. The functional status for classifying for Skilled Nursing facilities, home health agencies and rehabilitation hospitals are derived from assessment tools. The obtained relative weights for the case mix groups are then used to adjust the prospective base payments for the provider type.

Plan payments

Starting in the mid-eighties, beneficiaries of the Medicare program were able to choose between traditional Medicare where treatments are remunerated on a fee-for-service basis or to be enrolled in a participating health plan that receives a risk-adjusted capitation premium for more comprehensive ser-

[1] In 2007, about 44 million people were covered by Medicare, 37 million people aged 65 and over and 7 million under the age of 65 with permanent disabilities (Kaiser Family Foundation 2007, 1).

vices (McGuire 2007, 88).[2] The procedure of risk-adjustment is comparable to the one for provider payments: the beneficiaries have to be assigned to a group of patients and for each group there exist relative weights (Kominiski 2007, 8). The community-rated premium is then adjusted using the relative weights.[3]

Before the introduction of the relative weights that are based on a patient classification system, risk-adjustment for premiums only took demographic differences across enrollees into account. Starting in 1985, the first classification system was based on age, gender and other demographic characteristics. Moreover, institutional status and Medicaid eligibility were taken into account but information on health status or clinical conditions was missing.

Problems of risk adjustment in Medicare

Because of ongoing advances in medical technology, diagnostics and treatment strategies and the responses of providers to the remuneration system, the risk-adjustment formula has to be enhanced. One problem is that even within the defined risk categories there is variation between the included individuals (Kominski 2007, 9). One source of variation in costs may be an imprecise patient classification system that fails to distinguish adequately among the beneficiaries. For a better classification, more information is needed. Although for payments to acute care hospitals almost 600 DRGs are used, it is possible that patient severity within one DRG is not accounted for. It follows that some patients within a DRG are more profitable than others. But an expansion of patient groups is only favorable as long as the variability within groups is reduced and additional groups improve the accuracy of payments, accounting for a significant proportion of the variance in cost differences (Kominski 2007, 9–10). In addition, there are diminishing returns to additional groups in the adjustment formula that outweigh the improved precision that also requires additional patient data.

Another issue is concerned with changes in treatment and diagnosis over time. If we observe different medical practices and therefore changing costs, the adjustment formula and the classification system need to be revised. Again, due to data problems (i.e., data are not available or adequate for modifying the system) differences in treatment are dealt better with payment adjustments.[4]

The last two issues deal with the provision and billing of the services provided. First, in the prospective payment systems (PPS) bundles, the units range from a day of care in a psychiatric hospital up to 60 days for home health care. Providers might have an incentive to shift at least some of the services outside of the bundle for reducing cost and increasing profitability. Medicare handles this problem by defining the bundle to include all services provided from the provider and three-days prior to admission. Second, there are incentives to upgrade treated patients in a higher category even though the resource needs are not comparable to the average patient in that category (up coding). Providers use any changes in the risk factors to ensure that the patient is assigned to those case mix groups that yield higher revenue. Medicare's task therefore is to establish risk factors that cannot be used for up coding or gaming.

Switzerland

In 1996 competition in the Swiss social health insurance was introduced. Based on community rated premiums, the Federal Law on Health Insurance (KVG) established that health plans compete for the insured in the 26 cantons (Beck et al. 2003, 63). Prior to this development was the introduction of a retrospective risk-adjustment scheme in 1993. As in other countries, the aim was to reduce the incentives for insurers to engage in risk selection.

Health insurance in Switzerland can be divided into a mandatory basic insurance and a supplementary private health insurance (Leu and Beck 2007, 120). Both systems are based on the principle of individual insurance, i.e., each individual has to conclude a contract with an insurer. At present, about 90 health plans supply the market with mandatory insurance.[5] Here, it is worth mentioning that not all insurers are

[2] It should be noted that the alternative of enrolling in a health plan never attracted more than 20 percent of beneficiaries. Moreover, the initial intention that through this opportunity the program costs might fall failed (McGuire 2007, 88).
[3] Besides the premiums for Medicare managed care (Medicare Advantage, Part C) also premiums for the prescription drug benefit (Part D) are risk-adjusted (Kominski 2007, 8).
[4] Kominski refers to the case in which one patient receives a new procedure or method and therefore differs from patients who receive this care only when it is established. He suggests outlier payment, risk corridors or partial capitation payments as adequate alternatives as long as the necessary data is not available (Kominski 2007, 11).
[5] The market share of the four biggest insurers adds up to 80 percent (Leu und Beck 2007, 121).

present in every canton, on average there are about 40–60 insurers in a canton (Beck et al. 2003, 66).

The new law on health insurance introduced a higher degree of competition into the health care system that is certainly comparable to the Netherlands after 2006 or to the situation in Germany after the latest health care reform act. In theory there are three markets. The Swiss health care system combines public, subsidized private and fully private health care in a unique manner. Like most developed countries, the Swiss health care system is funded through a combination of public and private sources. However, the proportion of expenditure from public sources is one of the lowest in Europe. Expenditure structure has changed markedly over the past 20 years. Tax financing, health insurance financing and direct payments approximately follow a one-third rule. The Swiss health insurance system has three components: mandatory basic insurance; voluntary supplementary insurance; and disability insurance. All Swiss residents must have a mandatory basic health insurance. Insurers are obliged to accept all applicants, thereby avoiding cream-skimming at least in parts. Both registered health insurance funds and private insurers are permitted to provide the compulsory basic insurance so that the risk selection opportunities can be viewed as broader than in other European countries that have a more stringent separation between these two types of insurers.

The Swiss basic package is quite comprehensive and comparable to the scope of the benefits package in Germany, for example. The main difference lies in dental treatment, dentures and private accidents, which are largely not included in the basic Swiss package, whereas alternative and complementary medicine is included. There is an open enrollment policy, so individuals can change their health plan every half year. The coverage is comprehensive, a uniform benefits catalogue exists, and premiums are community rated and controlled by the Federal Office for the Social Insurance (BSV). The health insurance law defines the scope of the benefits package under compulsory insurance. Benefits are standardized throughout Switzerland. Services covered must meet criteria of effectiveness, appropriateness and cost-efficiency. Selective contracting has been possible since the 1996 law. All in all there is still little scope for competition based on quality of service. Instead, insurers compete on the basis of price – that is premiums and variable deductibles. Switching between insurers is now more common than under past legislation.

Premiums are federally regulated and independent of income. They are community rated, that is, the same for every person with a given company in a given area, regardless of individual risks. Every family member is insured individually, regardless of age. However, all insurers offer premiums for dependents up to age 25. Premiums vary from insurer to insurer and may vary substantially from canton to canton. Patients may also opt for bonus options for no claims as in the German private health insurance market. For those who cannot pay the premiums, i.e., their premium would be more than roughly 10 percent of income, the federal and local government pays means-tested subsidies directly to the insured. At present about 40 percent of the insured benefit from such premium.

The Swiss health care system has co-payments in the form of an annual minimum deductible called ordinary franchise (SFR 300). Insurance companies can offer deductibles up to SFR 2,500 at most. The insured can reduce their premium by opting for one of these higher optional deductibles. In order to protect solidarity, premium reduction limits are set annually by the federal government.

Risk adjustment in the Swiss system

Up to now the structure of the risk-adjustment system in Switzerland has been rather simple. Main risk indicators are age, gender and region because as already mentioned insurance premiums may differ between cantons. Hence, the Swiss system has a demographic risk adjustment (Leu und Beck 2007, 124). Individuals are classified into categories with respect to gender and age. For the latter risk indicator there are 15 age groups starting from 19 to 25 years.[6] Together, 30 risk classes are used in each canton, which makes 780 classes for the whole country. The payments are calculated retrospectively in each canton by calculating and comparing the average cost for all adult insured individuals with the average costs for the risk class of an insurer. If the average costs of a risk category are beyond those of the whole canton, the insurer has to pay for the difference for each insured individual in this category and vice versa. From 2002 to 2005, the budget for risk adjusted distribution in Switzerland was between SFR 1,039 and 1,163 billion. In 1996, the registered

[6] Between 25 and 90 years the age groups are divided in 5-year steps. The highest class covers those individuals aged 91 years and above.

insurance companies created a solidarity fund responsible for risk adjustment in light of differential risk pool problems. The formula is based on age and gender of the insured. The suggestion is to include other criteria such as the number of hospital treatments per year. One interesting fact is that the distribution within the group of net recipients and net contributors is very disproportionate (Beck et al. 2003, 68f.). 62 health plans pay into the equalization fund and 56 receive transfers. Most of the money (71 percent) comes from only five sickness funds while five funds receive more than 80 percent of the redistributed payments. The distribution of the payments into and out of the equalization budget can be seen as an expression of differences in the risk structure of the health funds rather than the impact of market power.

The health care reform act of 1996 introduced pro competitive changes in the market of sickness funds. The legislator expected a higher mobility between sickness funds of both the healthy and sick insured as open enrolment was introduced with the new law. That is why the risk adjustment scheme was initially limited until 2005 and is still under discussion. However, consumer mobility remained low and risk selection strategies are still profitable.

Future trends

This risk-adjustment system has been the object of criticism (Beck et al. 2003 or Leu and Beck 2007). First, the problems are related to an imprecise assessment of morbidity through the used indicators age and gender. This indirect approach may result in inhomogeneous risk categories and therefore leave space for risk selection through health plans. Second, the risk adjustment in Switzerland is calculated retrospectively. Hence, it resembles a system of cost refund in some sense which rewards management inefficiency through higher transfers. Third and related to the second point, health plans engaged in managed care projects have disadvantages because it might be more profitable to become involved in risk selection than in a high-quality treatment strategy. Fourth, the role of deductibles in the Swiss health care system is not considered in the risk-adjustment process. Through higher deductibles, it is possible to get a reduction in the community-rated premium. If these are preferred by the younger insured individuals and therefore the average health care expenditures decrease, the transfer or premium subsidy for the elderly insured increases even if their average expenditures are unchanged.

Because of these shortcomings, the Swiss system has been subject to a long debate centering on the question whether or not the adjustment system has to be completed through the incorporation of additional health or morbidity indicators (Beck et al. 2006).

One possibility of an enhancement is to include the hospital stays in the previous year, another to identify chronic diseases through the prescription of pharmaceuticals (e.g., pharmaceutical cost groups). The Swiss parliament (Ständerat) has discussed the two issues and plans the incorporation of hospital stays as an additional indicator of morbidity.[7]

It is interesting to notice that the Swiss government has decided to modify the existing risk adjustment formula moderately with an additional indicator but not to apply a differentiated patient classification model as is done in Germany or in the Netherlands or in parts of the Medicare and Medicaid program in the US. Beck et al. (2006) show that the inclusion of pharmaceutical cost groups goes along with only limited new information. According to their calculations, currently 40 percent of the insured are favorable customers to health plans whereas 18 percent are potentially discriminated against. By introducing the new indicator hospital stays in the last year, the numbers drop to 26 and 17 percent, respectively. Pharmaceutical cost groups only show a slight effect (25 and 18 percent). The study shows that the positive effects of engaging in risk selection show decreasing rates of return while the positive effects of managed care models and their potential reduction of costs become more important.

The Netherlands

The Dutch health care system was until 2006 characterized by a mixture of publicly and privately provided health insurance (Lamers, van Vliet and van de Ven 2003). From 1962 to 2006, about two-third of the population was covered by mandatory health insurance (ZFW) that included acute medical care provided in hospitals, by general physicians and drug prescriptions (Okma 2008). This social health insurance system covered people in lower income brackets. Among those who were not insured in the social health insurance the predominant number of individuals had voluntary private insurance and only one percent of the population was uninsured.

[7] It is worth mentioning that only hospital stays of a minimum of three days and stays because of births will enter the risk-adjustment formula.

In 2006, the Health Insurance Law introduced universal health insurance coverage for all legal residents of the Netherlands (national health insurance; Douven 2007, 166; Okma 2008, 3). The basic health insurance coverage is provided by about 40 insurers from which the individuals can choose on their own. Insurers have to accept each potential insured during annual open enrollment periods. Payments to insurers are twofold. First, the employers collect one part of the contribution as earmarked taxation. In 2007, this was a share of 6.5 percent of taxable income with a maximum of about EUR 1,950 per month (Bertelsmann Stiftung 2005). These contributions are collected by the tax department into a central fund (health insurance fund; HIF). These income-related contributions should reflect the income solidarity between the consumers. The role of this fund is to allocate the contributions to the insurers, thereby taking into account the differences in the risk structures. Hence, insurers will receive risk-adjusted premium subsidies that compensate for enrollees with predictably high medical expenditures. By using these subsidies, in theory the incentives for risk selection should decline. The second source of contributions is a flat-rate premium that is paid by the insured. Premium differences between health plans are possible but individuals within the same plan have to pay the same premium.[8]

Risk adjustment in the Netherlands

Risk-adjusted payments of the HIF to health insurers can be divided into ex ante (prospective) capitation payments and ex post (retrospective) payments (Douven 2007, 173ff.).[9] For the ex ante adjustment several risk adjusters are used by the government. The number of factors in the adjustment scheme has increased over time. In 1991, the first rudimentary adjustment system was introduced that relied on historical expenditures only. In the following years, adjusters like age, gender, urbanization and income were introduced. The two major reforms took place in the years 2002 and 2004. In 2002, pharmaceutical cost groups (PCGs) and in 2004, diagnostic cost groups (DCGs) were introduced. During this process, historical expenditures were abolished as indicators of morbidity.[10]

The idea behind the PCGs is to identify those individuals with indications of chronic health conditions (Douven 2007, 178). The PCGs include those outpatients who in the past received drug prescriptions indicative of certain chronic conditions. From the year 2006 on, seventeen conditions were used. The annual ex ante payments to health plans vary between EUR 332 for glaucoma and EUR 15,156 for severe kidney problems. This morbidity indicator raises incentive problems. It is possible that health care providers and plans use their knowledge on the capitation payments to alter their prescription behavior and to aim at maximizing their payments. In addition, providers and insurers might have an interest in encouraging the prescription of those drugs that fall into the PCG-system or to up code patients into higher cost groups. To reduce these incentives, the government imposed rules to assign patients into the cost groups, e.g., to use the prescribed daily doses instead of the number of prescriptions.[11]

The diagnostic cost groups should account for the high health care expenditures in the inpatient sector. The basic idea is that persons with a serious hospitalization in the previous year have above-average expenditures in the years after the treatment even if the expenditure effect is diminishing over time. The diagnosis groups are based on the ICD-9 codes and a DCG is a cluster of diagnosis groups with comparable future expenditures. The Dutch system consists of thirteen DCGs with risk-adjusted payments from EUR 1,293 to EUR 40,167. The incentives for providers and health plans are similar to those reported for the DCGs, namely to hospitalize people more than necessary to obtain higher future risk-adjusted premiums or to substitute outpatient for inpatient treatment. Again, the government imposed rules to restrict such behavior (see Douven 2007 for details).

Besides the ex-ante payments, the Dutch health care system also implemented an ex-post payment system to correct the *ex-ante* budgets for sub-systems. Hence, the financial risk of differences between ex ante budgets and the actual expenditures is not born by the health plans themselves but is due to the *ex post* adjustment mechanism. The idea that health

[8] Moreover, the government pays the premium for those younger than 18 years and families with low income are eligible for financial subsidies (Okma 2008, 3).
[9] The process of calculation for the ex ante payments consists of five steps that are described in detail in Douven 2007.
[10] In 2008, socioeconomic status was introduced as an additional risk adjuster.
[11] Other rules are that the prescription has to be related to a specific chronic condition and that the prescription in the previous year was for more than 181 days (Douven 2007, 179). Moreover, people can only be assigned to one PCG, and there must be a consensus on the use of the drug.

plans face higher risk goes back to the introduction of the *ex ante* adjustment in 1991. Regulators had concerns that the goal of more competition in the social health insurance market would go hand in hand with undesirable behaviors such as risk selection. Selection is favorable as long as an *ex ante* system does not adequately adjust for the distribution of different health risks among the competing plans. Therefore, the *ex post* adjustment system with retrospective payments is used to reduce these incentives. In the Netherlands between 1991 and 2005 various ex ante schemes were introduced (Douven 2007). First, a retrospective equalization for which each plan has to transfer a percentage of the difference between actual individual expenditures and *ex ante* capitation payments into a pool. All plans share the money in this pool except for their own transfers. Second, with the high-risk equalization, a percentage of all individual expenditures above a threshold are transferred into a pool. Again, this pool is equally shared among the plans. Third, health plans pay or receive payments into the retrospective compensation fund. Payments are based on a fixed percentage of profits or losses, i.e., on the difference between risk-adjusted capitation and the actual individual expenditures. Hence, the retrospective compensation system can be seen as a special form of risk-sharing.

Germany

The German risk-adjustment system (Risikostrukturausgleich RSA) was introduced with the 1993 Health Reform Act and since then only slightly modified. The German Federal (Social) Insurance Office (Bundesversicherungsamt; BVA) is responsible for implementation of the risk structure equalization, which has been in force since 1994. The RSA is the most extensive financial equalization procedure ever to be set up among the social sickness funds. All statutory health insurance funds participate in the RSA and a total of about 215 health insurance funds were involved in the 2007 equalization procedure.

The RSA equalizes the following risk structure-related differences between the different health plans:

- Income differences due to the varying amounts of the contributory income of the members of a health plan.
- Expenditure differences due to the varying distribution of morbidity risks among those insured in a health plan, as well as the varying numbers of non-contributing insured family members.

In order to determine the morbidity risks, the risk factors, age, gender, sick pay claims and incapacity for work are taken into consideration (Bundesversicherungsamt 2008). Since 2003, registration in a structured treatment program for the chronically sick (DMP) has also been taken into account. The financial transfer amounted to EUR 17 billion in the 2007 equalization procedure.

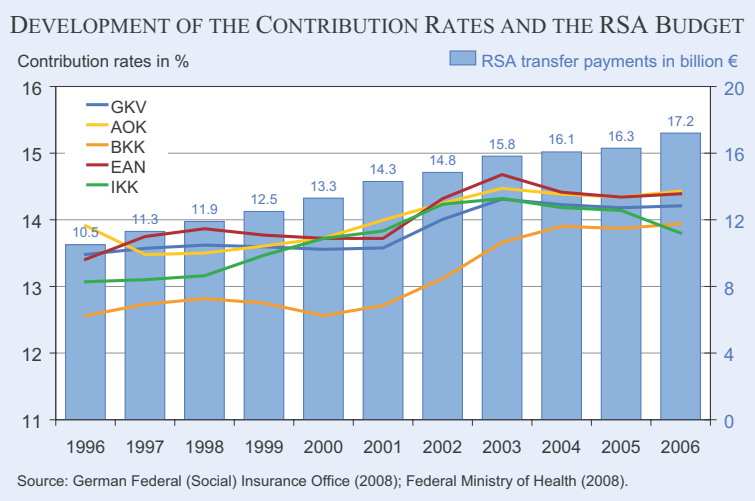
Risk adjustment in Germany

The German risk adjustment system aims at reducing existing inequalities in the contribution rates of statutory sickness funds (health plans) due to income differences and differences in the financial needs of health plans due to variations in dependents' coverage and long-term disability risks (Bundesversicherungsamt n.d., 2). From the viewpoint of the legislator, the RSA should enable the sickness funds to act as if they had the average risk structure of the insured in their insurance pool. Moreover, the incentive to gain advantages in the competition between the different sickness funds due to risk selection should be reduced. Lastly, risk-adjustment payments can contribute to increase the incentives for more efficiency in medical care and patient's supply. In its original design, the system was based just on the factors age, gender, sick pay claims and incapacity for work. It is important to notice that even this simple risk adjustment system is already morbidity-oriented and has the great advantage that the applied risk adjusters are exogenous, e.g., cannot be manipulated by the parties concerned.

Since 2002, the RSA is complemented by a risk pool. The risk pool partially equalizes the financial burdens for expensive treatment cases, going beyond the mere indirect morbidity allocation up to now. Approximately EUR 0.8 billion in financial funds were transferred to the risk pool. At present, the RSA contributes significantly to the convergence of contribution rates between the different health plans.[12] Figure 1 shows the development of health plan specific contribution rates. In 1996, the maxi-

[12] In Germany, originally sickness funds (health plans) were divided in several classes: the most important are the local sickness funds (AOK), the company health insurance funds (BKK), the guild health insurance funds (IKK) and the substitute sickness funds (EAN, blue-collar and white collar). Except for closed company health insurance funds, all other health plans are now open to all the insured.

Figure 1



mum difference between the plans was 4 percentage points and decreased to less than one percentage point in the year 2006.[13] In addition, one can see how the budget of the RSA has developed over time in Figure 1. In 1996 it was EUR 10.5 billion and increased to about EUR 17 billion in 2006.

In this system, the health plans' influence on competition is limited by law. The basic benefit package is standardized for all sickness funds. Selective contracts are just emerging and are still far from substituting the existing collective contracts. Therefore, one goal of health plans is to get as much out of the RSA budget or pay as little as possible. This fact might explain the rise in the RSA budget over the last 10 years. Most of the payments into the RSA come from the company health insurance funds (BKK) and the substitute sickness funds (EAN) whereas the local sickness funds (AOK) and the smaller miner health plan benefit from billions of euros they receive from the RSA.[14]

The German RSA does not work as *ex post* financial equalization but as an *ex ante* system of transfers between sickness funds. Therefore, differences in contribution rates are still possible and even appreciated, expressing at least in theory a varying efficiency between health plans. In a world with an optimal risk adjustment system, the remaining differences do not express risk selection behavior of health plans but varying competitive advantages in contracting, administration and scope of offered medical services (Wille 1999, 123). Generally, a risk adjustment system is a regulation of premiums or contribution rates, independent of its explicit design. Therefore, it can be viewed as the basis for the goal of more competition between health plans (Cassel and Janßen 1999, 15f.; Jacobs et al. 2001; Lauterbach and Wille 2001; IGES, Lauterbach and Wasem 2004). The relevant question concerning risk adjustment in Germany's statutory health insurance (SHI) is not whether such an adjustment system should be implemented but how to design such a system in order to support competition between health plans.

However, the current system of risk adjustment does not accomplish the objectives fully and a more morbidity based system of risk adjustment will be introduced in 2009. It seems to be necessary to fundamentally develop the RSA further in order to achieve a more precise distribution of the financial burden of varying risk structures between health plans. Therefore, in addition to the existing equalization factors (age, gender, sick pay claims and incapacity for work), as of 2009, the RSA shall also be based on the morbidity groups determined by the BVA in a classification model of insured persons. The classification model allocates the insured persons to morbidity groups on the basis of their inpatient diagnoses and outpatient prescriptions, arriving at a classification with similar medical expenses. In the future, there will be risk surcharges for these morbidity groups. The BVA calculates the compensation amounts for the individual health plans two times a year and transfers the amount to the new central health fund. From the health fund a single health plan then receives a uniform per capita payment for each insured person augmented by surcharges from the new risk adjustment system.

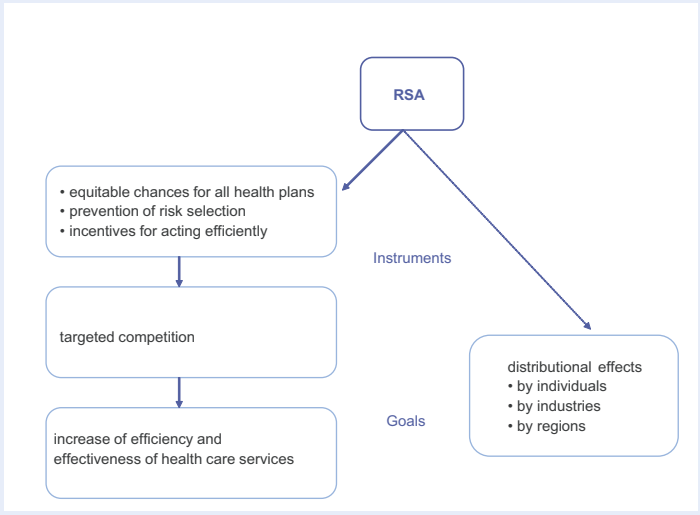
Future perspectives of the German RSA– the pros and cons

Risk adjustment should drive competition between health plans, which itself is an instrument to establish efficiency and effectiveness in the health care sector.

[13] It should be noted that the payments into and from the RSA as well as the contribution rates may differ between the different kinds of health plans. Moreover, if health plans are organized on a regional basis (in contrast to federal plans) there are also regional differences.
[14] It is worth mentioning that differences remain between the different kinds of sickness funds. Some of the substitute funds and company-based funds receive payments from the RSA as well.

Figure 2

MAIN FUNCTIONS OF THE GERMAN RSA



Source: Designed by the authors.

Figure 2 shows to what extent a risk adjustment system can be seen as an instrument to reach the goal of higher efficiency and effectiveness in the health care market. Under this perspective, factors in the risk adjustment formula should serve the criteria of validity, exogeneity, measurability, litigability, efficiency and transparency (Breyer and Kifmann 2001, 25ff.).

It is obvious that the existing risk adjustment system fails to meet all criteria at the same time (Cassel and Janssen 1999, 21). No risk adjustment system is able to perfectly balance the morbidity risks between the different sickness funds (Schips 2005, 20). From an economic point of view, priority is not given to a maximum degree of redistribution among the sickness funds but to an optimal one, taking also into account the direct and indirect costs of a risk adjustment system (Beck 2005). In general, it would be sufficient to have a risk adjustment system concentrating on the variables that:

- cause significantly higher expenditures after reacting for exogenous variables like age and gender,
- are related to a relevant share of the insured individuals,
- significantly impact the contribution rate and
- show significant differences between the competing health plans (Meyers-Middendorf 1993, 364; Pfaff and Wassener 1996, 166; Cassel and Janßen 1999, 21).

In a competitive environment the morbidity structure of a sickness fund is just one factor determining its chances of success. Since other factors are of similar importance, e.g., market share, regional size or scope for contracting an adjustment system that concentrates only on the morbidity structure of the insured would miss the point. More important is that a broad spectrum of possibilities can be offered to health care suppliers and insured individuals. Maximizing returns from the existing risk adjustment pool can run contrary to the goal of fair competition.

The German approach of placing emphasis on equalizing the risk structures of health plans and the derived demand for a maximal differentiated risk adjustment system is basically the result of local health plans having insufficient freedom to maneuver. Without more competition in the health care market, health care reforms concentrating on the morbidity structure of the insured individuals will overburden the risk adjustment system. Looking at the SHI system as a whole, a risk adjustment system is a zero-sum game that does not automatically guarantee an increase in efficiency. More competition is of top priority, risk adjustment should not be overemphasized.

According to independent experts, the ongoing debate about Germany's RSA and about the accuracy of the transfer mechanism since the year 2000 can be summarized as follows: Basically, the risk-adjustment system is working and can be seen as an essential framework for competition in the SHI. But in detail, there is bias because, firstly, those individuals who change their health plans are the healthier ones. Secondly, health plans that are committed to treating patients with chronic illnesses face the risk of financial losses because for these patients health plans receive only negative marginal returns from the RSA. Hence, the incentive to supply services to the chronically ill is limited.

One way to deal with these problems is to use a broader range of indicators for patient's morbidity.[15]

[15] A second possibility is to give health plans more scope in the competition. By using this freedom, sickness funds my realize cost savings and improvements in quality. Moreover, the need for plans to concentrate on the distribution of the RSA budget is reduced (Wille and Schneider 1999, Wille et al. 2007).

In the 2001 reform of the RSA, the risk-adjustment system was linked to disease management programs (DMPs) and a pool for high risks was introduced (Göpffarth 2004, 5ff.). Both instruments did not show the desired improvements (Wille, Ulrich and Schneider 2008) because health plans may not be interested in high quality DMPs and the financial losses of high risks are mitigated but not completely removed by introducing a risk pool.

Since 2004 ideas, based on scientific research, for a further differentiation of the RSA and the criteria for risk-adjustment have been proposed (IGES et al. 2004). An insured classification model has been suggested in which surcharges on the basis of hospital diagnoses (IPHCC, Inpatient Hierarchical Condition Catagories) and on the basis of pharmaceutical components (RxGroups) are used as morbidity characteristics.

In the health care reform act of the year 2007 (GKV-WSG), it is intended that 50–80 cost-intensive chronic diseases are used as indicators. These are diseases with average treatment expenditures per insured that are at minimum 50 percent higher than expenditures for all insured. Beginning with the 1 January 2009, major changes will affect the SHI in Germany. Besides the introduction of a morbidity-based RSA, a new remuneration system for outpatient physicians, a new framework for hospitals and, finally, the implementation of a health fund with a nationwide contribution rate. The latter is deeply intertwined with the morbidity-based RSA. Risk-adjusted surcharges for ill individuals and very expensive treatments will be paid to the different health plans. Therefore, a list of 80 illnesses has been prepared including, e.g., HIV, breast cancer, diabetes and osteoporosis. With this list, the complexity of the whole RSA system is growing. Up to now, mostly calendar age and gender have been used as variables influencing the distribution of revenues. Independent of whether, e.g., a woman ages 42 is ill or not, the receiving health plan receives an amount of EUR 1,151 (Staeck 2008). In the new system, the morbidity of the community of policyholders of a health plan is the basis for the adjustment. The monetary requirements in the morbidity-based RSA are calculated using the average standardized expenditures for the insured with one or more diseases.

For a working system a classification algorithm is needed that assigns the insured to the morbidity categories. If this algorithm is imprecise, this leads to a bias because, e.g., a health plan with a high number of critically ill persons might receive insufficient transfers from the health fund. In such a case, the plan has to charge an extra contribution from its members (Igel and Schaufler 2006).

It is therefore crucial for the new morbidity-based RSA that the classification algorithm is a transparent and comprehensible one. This may lead to the achievement of one central goal of a risk-adjustment system, namely that competition for the health insured is replaced by competition for the best treatment strategies. But even if distortions in competition are reduced due to morbidity-based factors in the adjustment scheme, the classification algorithm will remain more or less rough.[16]

One problem with a detailed morbidity-based adjustment system is that lack of transparency may create incentives for manipulation (e.g., up coding). For a large group of people such as the German SHI-insured individuals, it is impossible to check whether a former chronic disease has been resolved. It is planned to introduce additional set screws but no information about their accuracy is available at present. For outpatient care, the insured has to provide at least two diagnoses for a disease within two different quarters of a year. Moreover, the additional financial resources from the RSA reform can only be paid out if, e.g., a patient suffering from pneumonia has a prescription of at least ten daily doses for a certain drug. For selected chronic diseases, a period of 183 sickness days is required. Because of the uncertainty about the future revenues in the year 2009, health plans might reassess or even discharge their group contracts. Hence, the morbidity-based RSA may impose negative incentives with respect to integrated health care and individual contracts.

Lessons to learn from international experiences

Especially in an extended risk-adjustment system, players may seek to increase the transfers from or to diminish payments into the system.[17] The resources

[16] A health plan might receive high payments for a simple and a comparatively cheap disease and too little for expensive treatments. For a patient with bronchial asthma and COPD (Chronic Obstructive Pulmonary Disease), a plan gets the same morbidity surcharge, independent of whether the treatment was for an in- or outpatient.

[17] The scientific advisory board of the company-based sickness funds (Wissenschaftlicher Beirat der Betrieblichen Krankenversicherung) is worried about the possibility that health plans will engage in maximizing their transfers or minimizing their payments in a more morbidity-based adjustment system (Wissenschaftlicher Beirat der Betrieblichen Krankenversicherung 2006, 3).

used to reach these financial goals are economically non-productive and inefficient, and can be summarized as rent-seeking activities.[18] In contrast to private health insurance markets, competition parameters (e.g., selective contracting or additional services) have been missing in social health insurance systems up to now. Therefore, health plans largely rely on redistributive transfers from the risk adjustment system. In Germany, the RSA can be seen as the largest redistribution system in the health care market. Whether the extension of the existing system by introducing more direct morbidity-indicators will produce higher rent-seeking activities or not remains unclear. However, in combination with the new morbidity-based remuneration of physician services both health plans and providers may have an interest in up coding sickness cases (Klusen and Pütz 2006).

One argument for the extension of risk adjustment systems is to impede health plans engaging in risk selection. If the choice of health plans is based on individual preferences, moving between health plans may not be viewed as an efficiency problem. As long as every individual is free to change his health plan without suffering a financial loss self selection seems to be more of a fairness than an efficiency problem.

The inclusion of soft and possibly endogenous indicators like hospital diagnoses and pharmaceutical prescriptions leads to an adjustment system that is characterized by bureaucracy, control intensity and a lack of incentives for prevention. In combination with the morbidity-based remuneration system for outpatient care and Diagnosis Related Groups (DRGs) in hospitals this leads to a bias in favor of therapeutic services. Hence, providers and health plans may have a common interest in "generating morbidity" that is refunded by the adjustment system. Hence, in a system with maximum risk adjustment there is a lack of incentives to invest in prevention. This is in contrast to the intention of the German government to establish prevention as a fourth cornerstone – besides acute care, rehabilitation and long-term care – of the health system.

From an international perspective, there are a variety of risk adjustment systems that could be applied or at least included in the German reform debate.

[18] *Rent-seeking* describes activities of individuals, employers or interest groups that aim at influencing the decisions made by the government in their own interest (Connolly and Munroe 1999). In detail, they seek to generate rent and achieve redistribution goals through their impact on the decision-makers.

More precisely, there are numerous alternatives to a differentiated risk adjustment system with advantages vis-à-vis controllability, practicability, and administrative efficiency, as well as transparency and acceptance. Our primary concern is to have these alternatives at least included in the ongoing German reform debate. As is evident from experience in other countries a morbidity-based risk adjustment system which is all-dominant does not exist, meaning that numerous adjustments are still being implemented ex-post in all analyzed countries. In contrast to the health insurance systems in the United States, the Netherlands and Switzerland, in the existing statutory health insurance system in Germany the health plans have relatively few risk selection tools, meaning that greater differentiation in the risk adjustment system to avoid this danger is not a basic necessity.

Within the framework of competition the morbidity structure of the insured is just one factor which determines a sickness fund's market opportunities. Additional competition-relevant parameters include, for instance, the market share and the regional density of the sickness fund. At present, the main obstacles to efficient competition within the SHI system are less an inadequate morbidity-oriented risk adjustment system than the absence of adequate competition parameters in the contract and benefits sector. For efficient competition it is necessary to have more discretionary power for sickness funds and benefit providers accompanied by decentralization at the decision-making level. This means that allocation decisions are shifted away from joint and uniform decisions towards a system of more selective contracts. Otherwise, there is a danger that the maximum risk adjustment system will become overloaded. At most, this would generate distributional effects, but no gains in efficiency or improvements with respect to effectiveness.

Conclusion

In 1996, the German statutory health insurance market was opened to competition. People insured were now allowed to choose their health plan freely. To avoid adverse selection, an obligation to contract was introduced for all health plans and, moreover, a risk adjustment system based on age, gender, sick pay claims and incapacity for work was introduced to offset comparative advantages/disadvantages resulting from differences in risk structures.

Empirical results (Knaus and Nuscheler 2002) show that the existing risk adjustment system in Germany is incomplete in the sense that after 1996 there was a transition towards the company-based sickness funds (BKKs) attracting the newly insured with low contribution rates. This raises doubts whether the existing scheme is able to control for varying risk structures and whether the existing scheme should be advanced to have a more direct morbidity orientation. A more direct morbidity-oriented risk adjustment is found in various other countries, e.g. the US, the Netherlands and Switzerland.

From 2009 on, a patient classification model will be introduced into the German system. The classification model allocates the insured individuals to 80 morbidity groups on the basis of their inpatient diagnoses and outpatient prescriptions, arriving at a classification with similar medical expenses. In the future, there will be risk surcharges for these 80 chronic and expenditure intensive morbidity groups. Estimation assumes that about EUR 20 billion will be distributed among health plans according to the new system. The German system will be unique in as much that most other countries hardly redistribute such a great amount of money on a nationwide basis.

As is evident from experience in other countries, an ex ante morbidity-based risk adjustment system which is all-dominant does not exist, meaning that numerous adjustments are still being implemented ex post in all analyzed countries. All countries are working on fine-tuning their techniques and formulas, but they all have been doing this for years and still face challenges. The interesting question is what would happen if a country was able to find the right risk adjustment and make the system "fair". The result would be health plans that are all average.

Such a perfectly differentiated risk adjustment system would eliminate any reason for a sickness fund to invest in keeping their insured healthy, to effectively manage care, to seek out the best providers and help them to deliver the most cost-effective care. Instead, it would de-motivate insurers since there would be no reason to minimize costs if there were no financial reward for success. Rather, the danger would be that health plans will slash costs or eliminate disease management programs. A risk adjustment system is a kind of backstop to ensure that risk selection will not pay off. However, some insurers will always try to get ahead. For the task of an insurer to keep the insured healthy, we do not need a perfect risk adjustment but an optimal one, giving health plans the freedom to contract individually and to offer additional services and rewarding those sickness funds that do their business well.

References

Beck, K., S. Spycher, A. Holly and L. Gardiol (2003), "Risk Adjustment in Switzerland", *Health Policy* 65, 63–74.

Beck, K. (2005), "Risikostrukturausgleich im sozialen Krankenversicherungsmarkt. Optimale versus maximale Ausgestaltung der Ausgleichsformel", paper presented at the XV. Jahrestagung des Ausschusses für Gesundheitsökonomie des Vereins für Sozialpolitik Mainz, September.

Beck, K., M. Trottmann, U. Käser, B. Keller, S. von Rotz and P. Zweifel (2006), *Nachhaltige Gestaltung des Risikoausgleichs in der Schweizer Krankenversicherung,* Hep Verlag, Bern.

Bertelsmann Stiftung (2005), "Health Insurance Reform in the Netherlands", *Health Policy Monitor* 6.

Breyer, F. and M. Kifmann (2001), "Optionen der Weiterentwicklung des Risikostrukturausgleichs in der GKV", *DIW discussion paper* no. 236, Berlin.

Bundesministerium für Gesundheit (2006), *Eckpunkte zur Gesundheitsreform,* Berlin.

Bundesministerium für Gesundheit (2008), *Statistik* KG 1.

Bundesversicherungsamt (2008), "So funktioniert der neue Risikostrukturausgleich im Gesundheitsfonds", Discussion paper, Bonn.

Bundesversicherungsamt (2008a), "RSA 1994-2006", Discussion paper, Bonn.

Bundesversicherungsamt (n.d.), "Wie funktioniert der Risikostrukturausgleich?", Discussion paper, Bonn.

Cassel, D. and J. Janßen (1999), "GKV-Wettbewerb ohne Risikostrukturausgleich? Zur wettbewerbssichernden Funktion des RSA in der Gesetzlichen Krankenversicherung", in E. Knappe, ed., *Wettbewerb in der Gesetzlichen Krankenversicherung,* Baden-Baden, 11–49.

Connolly, S. und A. Munroe (1999), *Economics of the Public Sector,* Prentice Hall, New Jersey.

Cutler, D. and R. Zeckhauser (2000), "The Anatomy of Health Insurance", in A. J. Culyer and J.P. Newhouse, ed., *The Handbook of Health Economics*, vol. 1A, North-Holland, Amsterdam, 563–643.

Douven, R. (2007), "Morbidity-based Risk Adjustment in the Netherlands", in E. Wille, V. Ulrich and U. Schneider, eds., *Wettbewerb und Risikostrukturausgleich im internationalen Vergleich,* Beiträge zum Gesundheitsmanagement 17, Nomos Verlagsgesellschaft, Baden-Baden, 165–204.

Glazer, J. and T. McGuire (2006), "Contending with Risk Selection in Competitive Health Insurance Markets", *Perspektiven der Wirtschaftspolitik* 7, Sonderheft, 75–91.

Göpffarth, D. (2004), "Die Reform des Risikostrukturausgleichs – eine Zwischenbilanz", Discussion paper, Berlin.

Igel, C. and T. M. Schaufler (2006), "Der neue Zusatzbeitrag als Wettbewerbsparameter. Strategische Wettbewerbsoptionen der Krankenkassen nach der Gesundheitsreform 2006 – eine positive Analyse", *Beiträge zur Gesellschaftspolitik* 9, 24 August.

IGES, Lauterbach, K. and J. Wasem (2004), "Klassifikationsmodelle für Versicherte im Risikostrukturausgleich", final report, Berlin.

Jacobs, K., P. Reschke, D. Cassel and J. Wasem (2001), "Zur Wirkung des Risikostrukturausgleichs in der gesetzlichen Krankenversicherung", final report, Berlin, Duisburg, Greifswald.

Kaiser Family Foundation (2007), *Medicare – a Primer,* Washington DC.

Kaiser Family Foundation (2008), *Health Insurance Coverage in the US,* Washington DC.

Klusen, N. and C. Pütz (2006), "Wettbewerb statt Rent-Seeking. Visionen für einen Krankenversicherungsmarkt mit Zukunft", in D. Göpffarth, S. Greß, K. Jacobs and J. Wasem, eds., *Jahrbuch Risikostrukturausgleich 2006,* Zehn Jahre Kassenwahlfreiheit, Asgard Verlag, St. Augustin, 231–247.

Knaus, T. and R. Nuscheler (2002), "Incomplete Risk Adjustment and Adverse Selection in the German Public Health Insurance System", Discussion paper, FS IV 02 – 27, WZB Berlin.

Kominski, G. F. (2007), "Medicare's Use of Risk Adjustment", National Health Policy Forum, background paper, 21 August.

Lamers, L. M., R. C. J. A. van Vliet and W. P. M. M. van de Ven (2003), "Risk Adjusted Premium Subsidies and Risk Sharing: Key Elements of the Competitive Sickness Fund Market in the Netherlands, *Health Policy* 65, 49–62.

Lauterbach, K. and E. Wille (2001), "Modell eines fairen Wettbewerbs durch den Risikostrukturausgleich", Gutachten im Auftrag des Verbandes der Angestellten Krankenkassen e.V. (VdAK), des Arbeiter-Ersatzkassen-Verbandes e.V. (AEV), des AOK-Bundesverbandes (AOK-BV) und des IKK-Bundesverbandes (IKK-BV), Cologne, Mannheim.

Leu, R. E. and K. Beck (2007), "Risikoselektion und Risikostrukturausgleich in der Schweiz", in E. Wille, V. Ulrich and U. Schneider, eds., *Wettbewerb und Risikostrukturausgleich im internationalen Vergleich,* Beiträge zum Gesundheitsmanagement 17, Nomos Verlagsgesellschaft, Baden-Baden, 119–63.

McGuire, T. (2007), "Risk Adjustment Systems in Competitive Health Insurance Markets: Lessons from the United States", in E. Wille, V. Ulrich and U. Schneider, eds., *Wettbewerb und Risikostrukturausgleich im internationalen Verlgeich,* Nomos, Baden-Baden, 69–113.

Meyers-Middendorf, J. (1993), *Die Gestaltungsrelevanz marktwirtschaftlichen Wettbewerbs in der Gesetzlichen Krankenversicherung. Sozialökonomische Analyse der Möglichkeiten und Grenzen eines Krankenkassenwettbewerbs,* Cologne.

Okma K. G. H. (2008), "Recent Changes in Dutch Health Insurance: Individual Mandate or Social Insurance?", paper commissioned by the National Academy of Social Insurance and the National Academy of Public Administration Annual Meeting, January.

Pfaff, M. and D. Wassener (1996), "Risikoselektion dauerhaft vermeiden. Der Risikostrukturausgleich hat sich bewährt", *Forum für Gesellschaftspolitik,* 165–170.

Schips, B. (2005), "Anmerkungen zur aktuellen Diskussion über den Risikostrukturausgleich in der obligatorischen Krankenpflegeversicherung (OKP)", ETH Zürich, Konjunkturforschungsstelle (KOF), Zürich.

Staeck, F. (2008), "Risiko-Ausgleich lässt Kassen alt aussehen", *Ärzte Zeitung,* 17 July.

Van de Ven, W. P. M. M. and R. P. Ellis (2000), "Risk Adjustment in Competitive Health Plan Markets", in A. J. Culyer and J. P. Newhouse, eds., *Handbook of Health Economics,* Elsevier, Amsterdam, 755–845.

Wille, E. (1999), "Auswirkungen des Wettbewerbs auf die gesetzliche Krankenversicherung", in E. Wille, ed., *Zur Rolle des Wettbewerbs in der gesetzlichen Krankenversicherung,* Nomos Verlagsgesellschaft, Baden-Baden, 95–156.

Wille, E. and U. Schneider (1999), "Regionalisierung, Risikostrukturausgleich und Verteilungsgerechtigkeit", in H. Rebscher, ed., *Regionalisierung der gesetzlichen Krankenversicherung. Ordnungspolitische, ökonomische und juristische Analysen,* Baden-Baden, 91-123.

Wille, E., V. Ulrich and U. Schneider (2007), eds., *Wettbewerb und Risikostrukturausgleich im internationalen Vergleich,* Nomos, Baden-Baden.

Wille, E., V. Ulrich and U. Schneider (2008), "Morbiditätsorientierte Weiterentwicklung des Risikostrukturausgleichs", in D. Göpffarth, S. Greß, K. Jacobs and J. Wasem, eds., *Jahrbuch Risikostrukturausgleich,* in press.

Wissenschaftlicher Beirat der Betrieblichen Krankenkassen (2006), *Finanzielle Effekte von RxGroups-klassifizierten Arzneiverordnungen in einem morbiditätsorientierten Risikostrukturausgleich.*